Primary Problem/Objective Statement

Ecosystem Quality

Problem

Much of the focus on ecosystem problems has centered on fisheries, especially those populations which have been designated as threatened or endangered under Federal and State laws, however, the underlying problem is much broader and more far-reaching. Declining fish populations and endangered species designations have generated major conflicts between beneficial uses of water in the Bay-Delta system. A primary reason for the decline is an overall loss of habitat to support various life stages of aquatic biota. The Bay-Delta system no longer supports a broad diversity of habitats nor the habitat quality necessary to ensure those ecological functions and connectivity necessary to maintain and propagate healthy populations and communities of plants and animals. The steady decline in habitat quantity, diversity, and quality results from many activities both in the Delta and upstream.

The earliest major damaging event was the unrestricted use of hydraulic mining in the river drainages along the eastern edge of the Central Valley. Overall, the effect of hydraulic mining was more serious than just causing habitat degradation in the Central Valley. The increase in frequency and extent of periodic flooding caused by mining debris accelerated the need for flood control measures to protect adjacent agricultural lands. Levee construction to protect these lands eliminated fish access to shallow overflow areas, and dredging operations to construct levees eliminated tule bed habitat along the river channels. Since the 1850s, 700,000 acres of overflow and seasonally inundated land in the Delta have been converted to agriculture or urban uses. Many of the remaining stream sections have been either dredged or channelized to improve navigation, to increase stream velocity during periods of flood, and to facilitate water export.

Upstream water development, depletion of natural flows and the export of water from the Delta have changed seasonal patterns of inflow, reduced annual outflow and muted the natural variability of flows into and through the Delta. Facilities constructed to support or mitigate the impacts of water diversion cause straying or direct losses of fish (e.g. unscreened diversions) and increased unnatural predation (e.g. Delta cross channel and Clifton Court Forebay).

Water quality degradation caused by natural and introduced pollutants may also have contributed to the overall decline in the health and productivity of the Delta. In recent years, an increase in the rate of colonization and the abundance of exotic species has resulted in competition for available space and food supplies, often to the detriment of native or economically important introduced species. Entrainment and export of substantial quantities of food web organisms, eggs, larvae and young fish further exacerbate the impacts from overall habitat decline.

Objective

The primary program objective for ecosystem quality is to improve and increase the quantity, diversity and quality of aquatic and terrestrial habitats and to improve ecological functions in the Bay-Delta system to support increased and sustainable populations of diverse and valuable plant and animal species.

Linkages

The decline of species dependent on the Bay-Delta system for all or part of their life cycle now results in considerable conflict between beneficial uses of the Delta and highlights the urgent need for resolution and restoration. Key issues which affect ecosystem quality are water export, outflow, levee and channel maintenance, and other nonflow related issues. Ecosystem quality can be restored or improved through changes in export timing and the method(s) of export. Enhanced flexibility in diversion and export activities can contribute

significantly to restoration efforts. If additional water supplies are developed or water needs are reduced, more functional Delta outflow can be provided. Improvement in levee maintenance and stabilization can be achieved by incorporating habitat restoration on or in levees and channels into future actions. If the conflicts over levee maintenance versus habitat could be addressed, levees could be rebuilt or improved using sound levee stabilization techniques which incorporate habitat elements such as shaded riverine, riparian and waterside berms. Additional habitat restoration could also be accomplished during efforts to address Delta island subsidence.